

Application No. 09/608,130
Supplemental Amendment dated 02/22/2005

AMENDMENT IN THE CLAIMS

Claims 1—9. (Cancelled)

10. (Currently Amended) An actuator ~~as recited in claim 1,~~ for an input device comprising:

_____ a core member, having a central projection;
_____ a coil wrapped around said central projection;
_____ a magnet positioned so as to provide a gap between said core member and said magnet and operable to move in a degree of freedom relative to said core member; and
_____ an elastic material disposed in said gap and configured to limit a range of motion of said magnet in said degree of freedom, wherein:

said core member comprises a first curved surface;

said magnet comprises a second curved surface; and

said elastic material is disposed in a gap formed between said first curved surface and said second curved surface.

11. (Currently Amended) An actuator for an input device comprising:

a core member having a central projection;

a coil wrapped around said central projection;

a magnet positioned so as to provide a gap between said core member and said magnet; and

a first flexible member attached to said core member and said magnet and configured to limit a range of motion of said magnet.

12. (Previously Presented) An actuator as recited in claim 11 further comprising an elastic material disposed in said gap.

13. (Previously Presented) An actuator as recited in claim 11 wherein said first flexible member is attached to said magnet and a grounded surface.

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14. (Cancelled)

15. (Previously Presented) An actuator as recited in claim 13 wherein said grounded surface comprises an actuator housing.

16. (Previously Presented) An actuator as recited in claim 11 wherein said magnet is configured to move linearly.

17. (Previously Presented) An actuator as recited in claim 11 wherein said magnet is configured to move rotationally.

Claims 18—25. (Cancelled)

26. (Previously Presented) An actuator as recited in claim 12, wherein said elastic material comprises foam.

27. (Previously Presented) An actuator as recited in claim 13, further comprising a controller electrically connected to said coil for generating a drive signal.

28. (Previously Presented) An actuator as recited in claim 13, further comprising a second flexible member attached to said magnet and said core member.

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29. (Previously Presented) An actuator as recited in claim 13, wherein:
said core member comprises a first curved surface;
said magnet comprises a second curved surface.
30. (Previously Presented) An actuator as recited in claim 29, further comprising an elastic material positioned in a gap formed between said first curved surface and said second curved surface.
31. (Currently Amended) An actuator for an input device comprising:
a core member, having a central projection;
a coil wrapped around said central projection;
a magnet positioned so as to provide a gap between said core member and said magnet; and
a ground member attached to said core member; and
a first flexible member attached to said core member and said magnet ~~and said ground member~~ and configured to limit a range of motion of said magnet.
32. (Previously Presented) An actuator as recited in claim 31, further comprising a second flexible member attached to said magnet and said ground member.
33. (Previously Presented) An actuator as recited in claim 31, wherein said ground member comprises a grounded surface.
34. (Currently Amended) An actuator as recited in ~~claim 34~~ claim 33, wherein said grounded surface comprises a surface of a housing.

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35. (Currently Amended) A device comprising:
a manipulandum having a housing; and
an actuator as recited in ~~claim 1~~ claim 31 coupled to said manipulandum and disposed within said housing.
36. (Previously Presented) A device as recited in claim 35, wherein said manipulandum comprises a joystick.
37. (Previously Presented) A device comprising:
a manipulandum having a housing; and
an actuator as recited in claim 11 coupled to said manipulandum and disposed within said housing.
38. (Previously Presented) A device as recited in claim 37, wherein said manipulandum comprises a joystick.
39. (Cancelled)